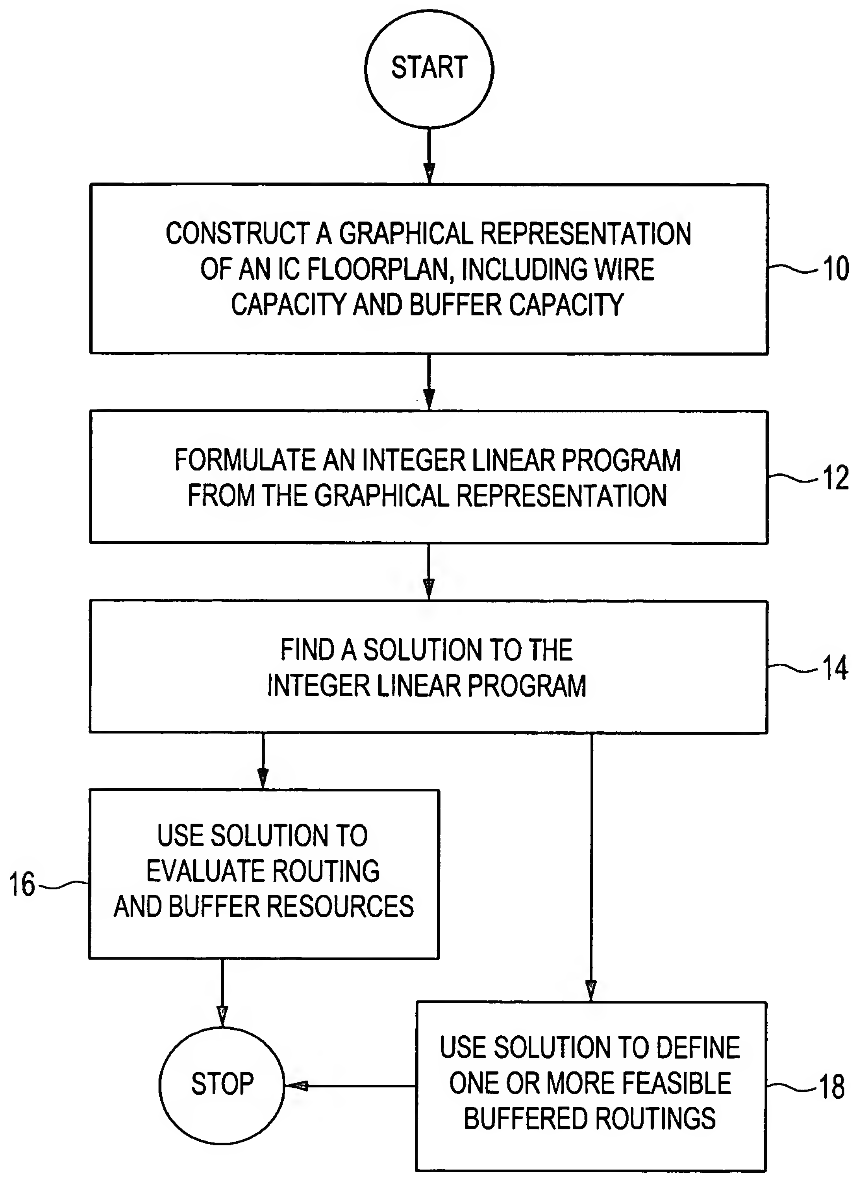
START
CONSTRUCT A GRAPHICAL REPRESENTATION OF AN IC FLOORPLAN, INCLUDING WIRE CAPACITY AND BUFFER CAPACITY
10
FORMULATE AN INTEGER LINEAR PROGRAM FROM THE GRAPHICAL REPRESENTATION
12
FIND A SOLUTION TO THE INTEGER LINEAR PROGRAM
14
USE SOLUTION TO EVALUATE ROUTING AND BUFFER RESOURCES
16
USE SOLUTION TO DEFINE ONE OR MORE FEASIBLE BUFFERED ROUTINGS
18
STOP

FIG. 1

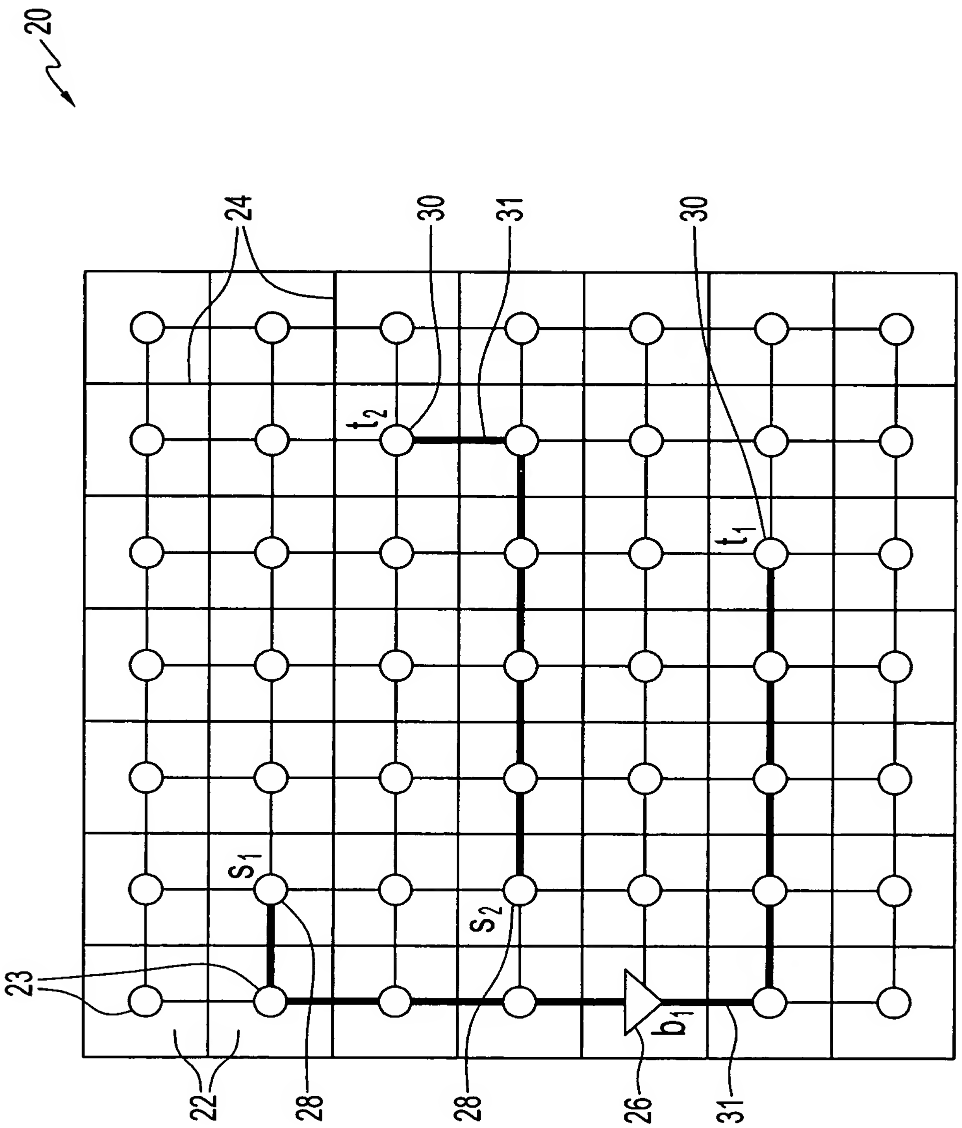

FIG. 2A

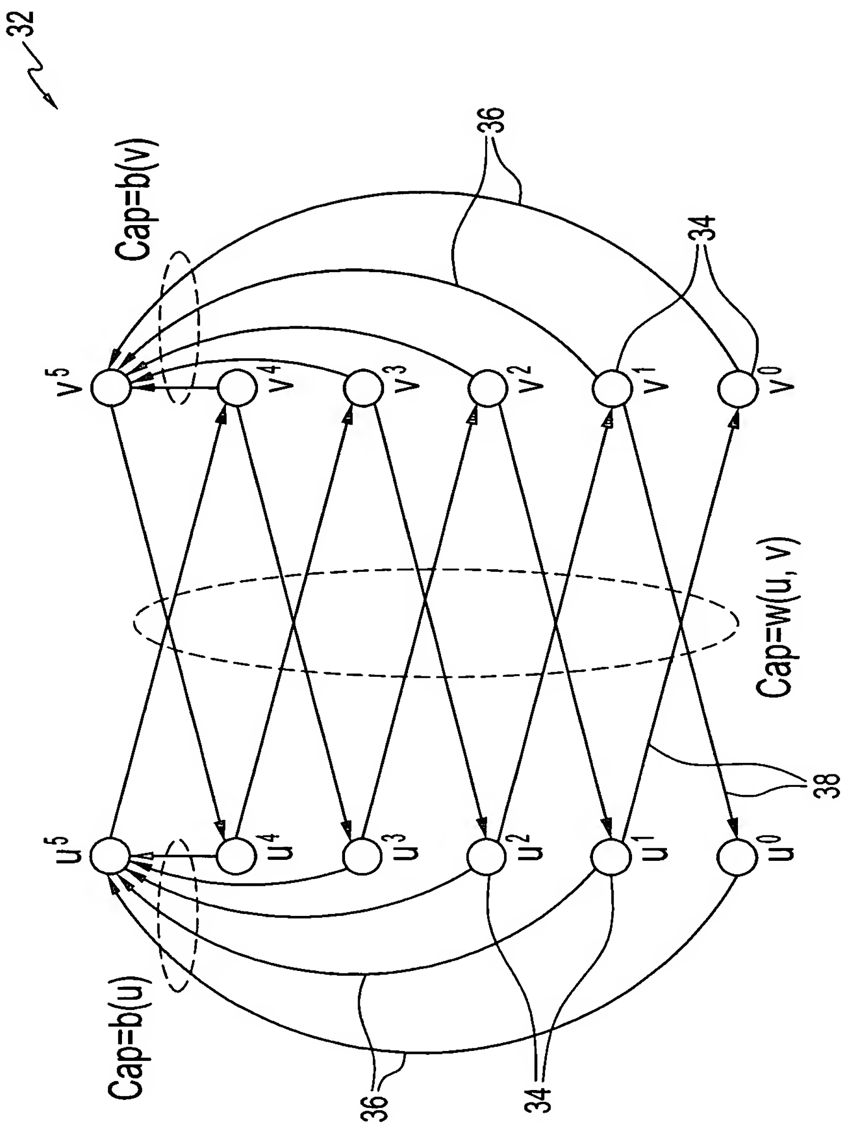
32
Cap=b(v)
Cap=b(u)
Cap=w(u, v)
v^5
v^4
v^3
v^2
v^1
v^0
u^5
u^4
u^3
u^2
u^1
u^0
36
34
38
36
34

FIG. 2B

(1) Set $y_v := \frac{\delta}{\mu_0 b(v)}\ \forall v \in V(G), \quad z_e := \frac{\delta}{\nu_0 w(e)}\ \forall e \in E(G), \quad u := \frac{\delta}{D}$

(2) Set $x_p := 0\ \forall p \in \mathcal{P}$

(3) Set $r = 0$ and $p_i := \emptyset$ for $i = 1, \ldots, k$.

(4) While $\mu_0 \sum_{v \in V(G)} b(v) y_v + \nu_0 \sum_{(u,v) \in E(G)} w(u,v) z_{u,v} + Du < 1$ do:

(5) **begin**

(6) r := r+1.

(7) For $i := 1$ to k, do

(8) **begin**

(9) If $p_i = \emptyset$ or $\sum_{v \in V(G)} |p_i \cap E_v| (y_v + \alpha u) + \sum_{(u,v) \in E(G)} |p_i \cap E_{u,v}| (z_{u,v} + \beta u) > (1 + \gamma\varepsilon)\, l_i$ then

(10) **begin**

(11) Find a path $p_i \in \mathcal{P}_i$ minimizing $l_i := \sum_{v \in V(G)} |p_i \cap E_v| (y_v + \alpha u) + \sum_{(u,v) \in E(G)} |p_i \cap E_{u,v}| (z_{u,v} + \beta u)$

(12) **end**

(13) Set $x_{p_i} := x_{p_i} + 1$

(14) Set $y_v := y_v \left(1 + \varepsilon \frac{|p_i \cap E_v|}{\mu_0 b(v)}\right) \forall v \in V(G), \quad z_e := z_e \left(1 + \varepsilon \frac{|p_i \cap E_{u,v}|}{\nu_0 w(u,v)}\right) \forall (u,v) \in E(G)$

$$u := u \left(1 + \varepsilon \frac{\alpha \sum_{v \in V(G)} |p_i \cap E_v| + \beta \sum_{(u,v) \in E(G)} |p_i \cap E_{u,v}|}{D}\right)$$

(15) **end**

(16) **end**

(17) Output $(x_p/r)_{p \in \mathcal{P}}$

FIG. 3

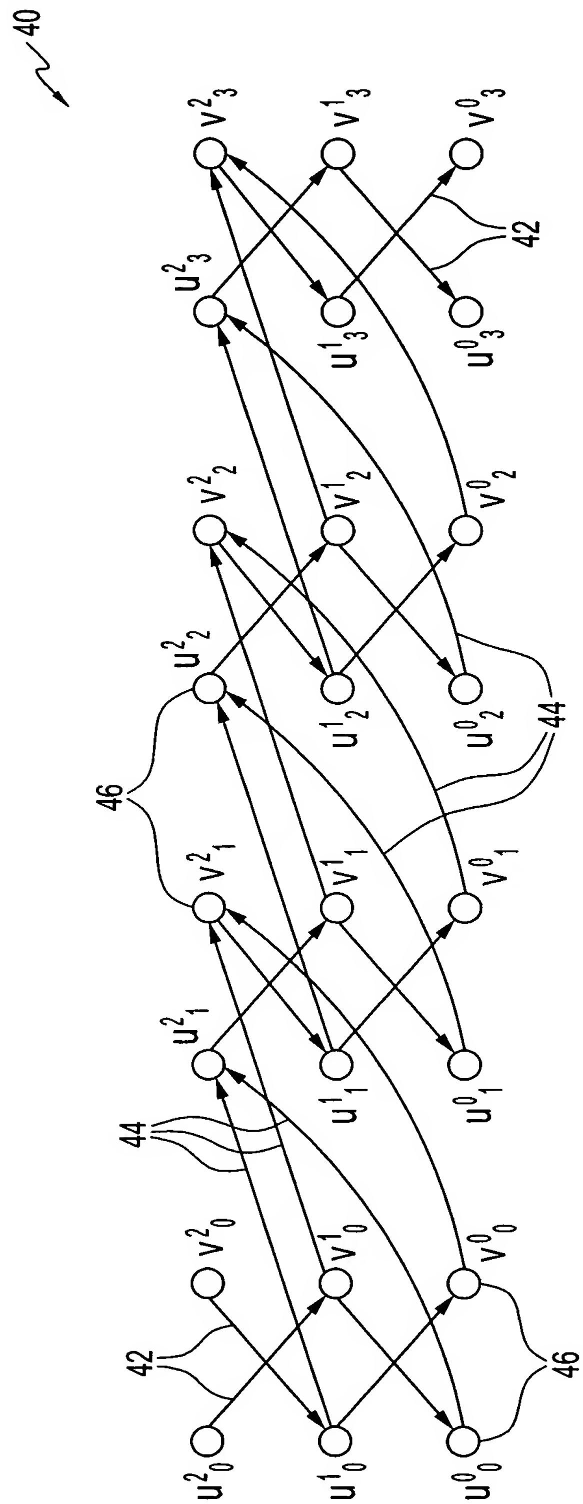

FIG. 4

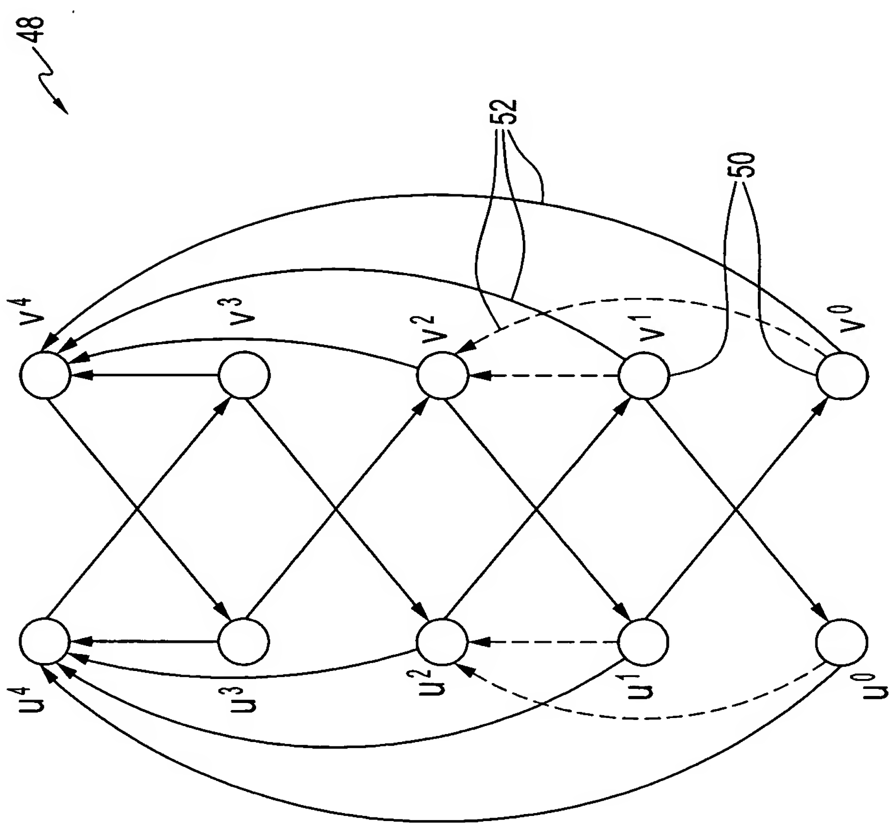

FIG. 5A

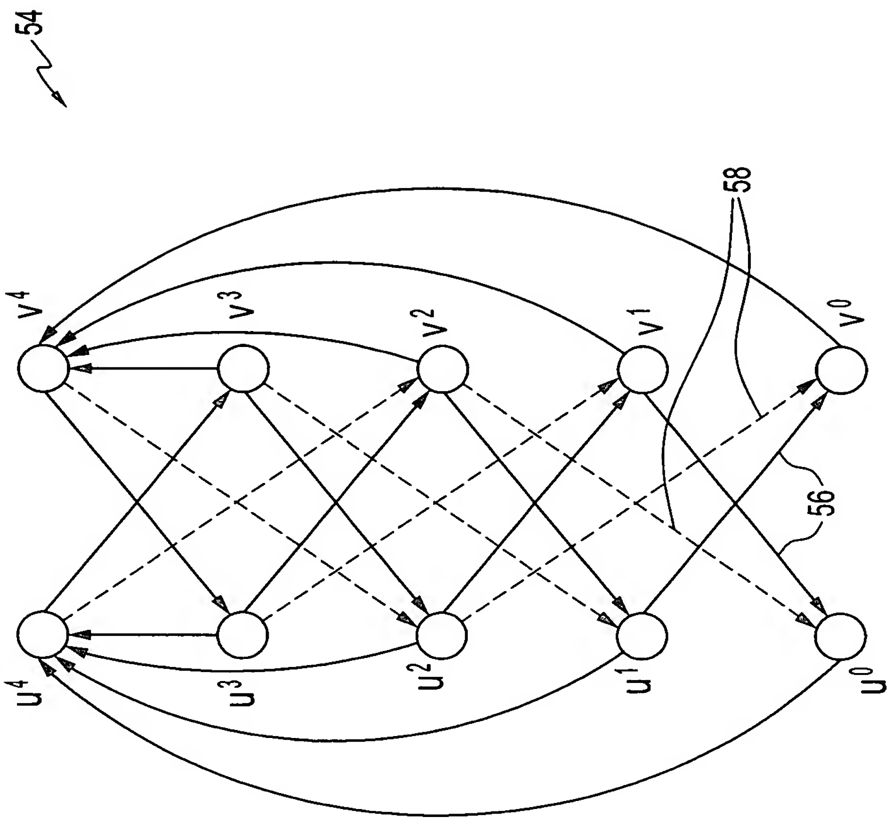

FIG. 5B

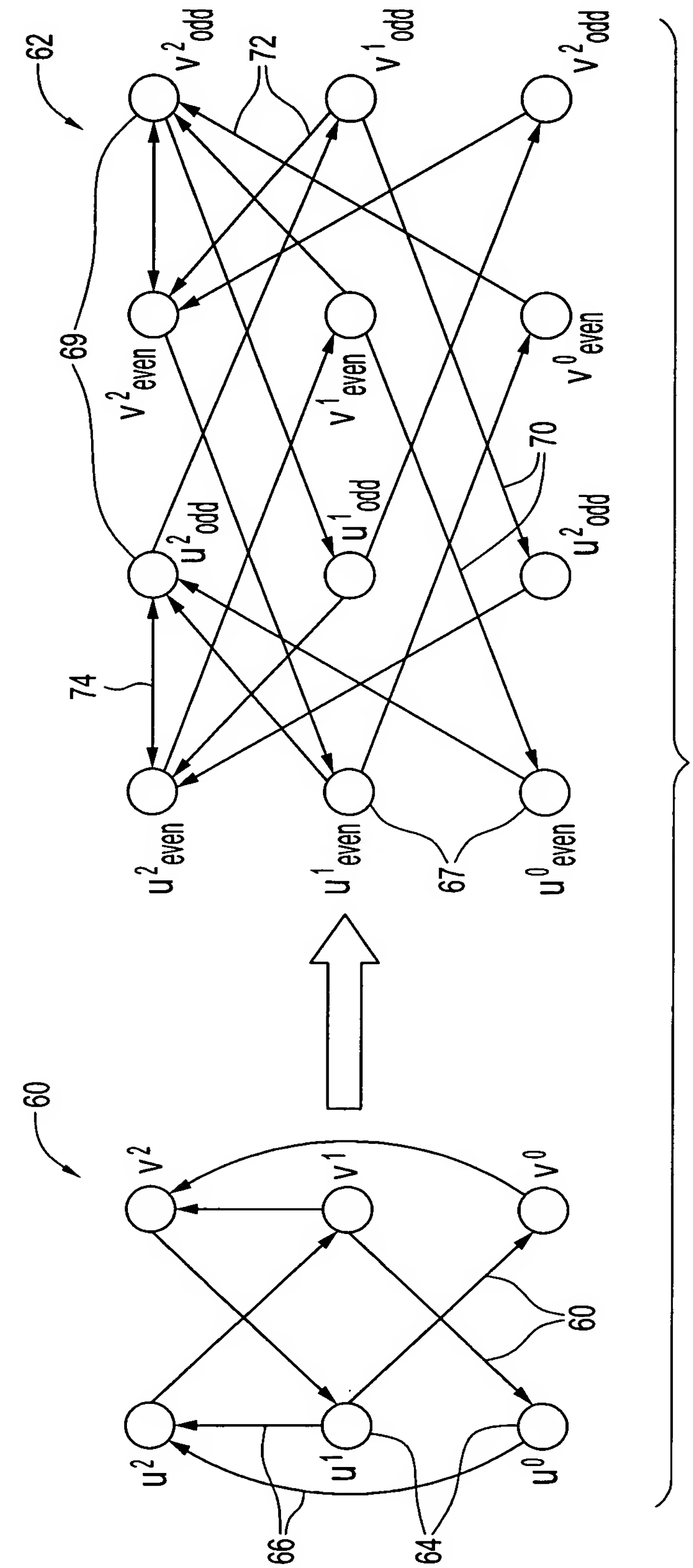

FIG. 6

(1) Set $w^* := \infty$

(2) For all $v \in V$ do // try all possible Steiner points

(3) **begin**

(4) For $j := 0$ to U

(5) **begin**

(6) Find a shortest $v^{U-j} - t_i^1$–path P_1 in H

(7) For $k := 0$ to $U - j$

(8) **begin**

(9) Find a shortest $v^{U-k} - t_i^2$–path P_2 in H

(10) Find a shortest $s_i^0 - v^{U-j-k}$–path P_0 in H

(11) If $w(P_0) + w(P_1) + w(P_2) \leq w^*$ then

(12) Set $w^* := w(P_0) + w(P_1) + w(P_2)$

$T^* := P_0 \cup P_1 \cup P_2$

(13) **end**

(14) **end**

(15) **end**

(16) return T^*

FIG. 7